NOAA – **Environmental Literacy 2007**

Sailing Elementary Teachers Towards Ocean Literacy Using Familiar Water Resources

Project Abstract

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Budget Requested:

Year 1	Year 2	Year 3	Year 4	Year 5	Total
$182,946	$95,818	$70,681	$73,163	$38,926	$461,534

We will expand the amount of Ocean and Great Lakes science taught in elementary classrooms. To accomplish this, we must improve teachers' understanding of ocean science and of methods for teaching ocean science, because the lack of these is a major obstacle to the inclusion of ocean and Great Lakes science in elementary classrooms. Elementary teachers are generalist educators who learn and teach language arts, science, math, social studies, art, music, and physical education. For example, at Eastern Michigan University (EMU), only 30% of students take science courses beyond introductory chemistry, physics, earth science, and biology. Unfortunately, since 70% of the elementary pre-service teachers are not majoring in science, the required science classes tend to be taught at a high school level, and, consequently, most elementary teachers have only a rudimentary literacy in science. We hypothesize that this lack of content instruction partially explains why many elementary teachers are not confident in their abilities to teach and self-learn ocean science and related Great Lakes science. Also, given a lack of adequate content knowledge, elementary teachers are not prepared to find, assess, and evaluate potential resources to support specialized science lessons, such as those compiled by NOAA's Great Lakes Environmental Research Laboratory (GLERL). We predict that this targeted training will transfer into increased in-service teaching of ocean and related Great Lakes science.

We plan to increase elementary and undergraduate ocean science and related Great Lakes science literacy that aligns with the Michigan Curriculum, the National Science Education standards, and the Ocean Literacy Essential Principles and Fundamental Concepts. We will 1) develop an Elementary Storybook and elementary classroom materials that support ocean and Great Lakes literacy, 2) train pre-service elementary teachers (at EMU) to use this Storybook, 3) develop undergraduate activities that support the NOAA Education Plan and Ocean Literacy in teacher education courses at EMU, and 4) train teachers in Detroit and Dexter (MI) and Golden (CO) to use an Elementary Storybook and activities that support Ocean Literacy. The University Corporation for Atmospheric Research and oceanographic experts at GLERL and EMU (Dr. Serena Poli) will partner with us to develop this Elementary Storybook resource. This elementary resource will be freely available to all teachers, via the internet.

Our second objective is that teachers will relate ocean and Great Lakes science to theirs and their students' lives. We will accomplish this by 1) producing teacher-friendly web resources that make Great Lakes data from GLERL accessible for use by elementary teachers and 2) teaching pre-service teachers to interpret these data during undergraduate, inquiry activities at EMU.

Our third objective is to measure environmental, ocean and Great Lakes literacy among pre-service teachers and their students before and after implementation of targeted instruction. We will accomplish this via 1) assessing pre- and inservice teachers' content knowledge and ability to apply content knowledge in ocean and Great Lakes science, 2) assessing elementary children for content knowledge and ability to apply content knowledge in ocean and Great Lakes science, 3) performance assessments of pre- and inservice teachers' abilities to interpret environmental data, 4) standardized tests of Earth Science content knowledge, and 5) surveys of pre- and inservice teachers' affective attitudes towards ocean literacy and supporting materials.